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(71) Applicant (for all designated States except US): ZENECA LIMITED [GB/GB]; 15 Stanhope Gate, London W1Y 6LN (GB).			
(72) Inventors; and (75) Inventors/Applicants (for US only): WHITCOMBE, David, Mark [GB/GB]; Zeneca Diagnostics, Research & Development Group, Gadbrook Park, Rudheath, Northwich, Cheshire CW9 7RA (GB). GRAHAM, Duncan [GB/GB]; University of Strathclyde, Dept. of Pure and Applied Chemistry, 295 Cathedral Street, Glasgow G1 1XL (GB). SMITH, William, Ewen [GB/GB]; University of Strathclyde, Dept. of Pure and Applied Chemistry, 295 Cathedral Street, Glasgow G1 1XL (GB).		Published With international search report.	
(74) Agents: KREMER, Simon, M. et al.; Mewburn Ellis, York House, 23 Kingsway, London WC2B 6HP (GB).			

(54) Title: NUCLEIC ACID SEQUENCE IDENTIFICATION

(57) Abstract

Disclosed are methods for determining the presence or absence of a target nucleic acid (e.g. DNA) sequence in a sample nucleic acid, the method comprising: (a) exposing the sample to a detection agent comprising a colloid metal surface associated with a SER (R) S active species (SAS) such as an azo dye and with a target binding species (TBS) which may be PNA which is complementary to the target, (b) observing the sample/agent mixture using SER (R) S to detect any surface enhancement of the label, characterised in that the binding of the TBS to the target sequence causes surface enhancement of the SAS.

The detection agent may be exposed to the sample in step (a) as two or more separate components and will generally comprise a first agent and a second agent each having a different TBS, each TBS being capable of binding to the target sequence, and wherein the binding of the first and second TBS to the target sequence brings a metal surface associated with each TBS into proximity thereby causing surface enhancement of an SAS associated with one or both of the metal surfaces. Generally a surface seeking group such as the benzotriazole group is used to promote chemisorption of the SAS and/or TBS to the metal surface. The method may be multiplexed, and has a variety of applications, particularly in the field of molecular biology. Also provided are processes for producing detection agents, the agents themselves, and associated compositions, systems, apparatus, kits and use of the same.

